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Sigma Product Information Sheet

8-METHYL-N-VANILLYL-6-NONENAMIDE

Sigma product number M2028

CAS NUMBER:

404-86-4

MOLECULAR FORMULA:

C₁₈H₂₇N O₃

MOLECULAR WEIGHT:

305.4

SYNONYMS:

Capsaicin, capsenoid from Capsicum fruit (red/chili peppers), trans-8-methyl-N-vanillyl-6-nonenamide

PHYSICAL PROPERTIES:

This is a white to off-white powder, with melting point reported as 65°C, boiling point at 0.01 torr = 210-220°C.(1)

Capsaicin is practically insoluble in cold water, but is freely soluble in alcohol, benzene, chloroform and slightly soluble in carbon disulfide.(1) Sigma tests the product in chloroform at 50 mg/mL, obtaining a clear colorless solution. It is also soluble in acetonitrile, and has been found stable at -20°C for several months (as determined by HPLC). (2)

In ethanol, observed lambda max = 281 nm (EmM = 7.3) and 229 nm (EmM = 3.00). (2)

HPLC ASSAY PROTOCOL:

(Sample data from lot 123H78342)

Column:

Sigma/Aldrich C18 DLP #4

25 cm X 4.6 mm I.D.

Particle size 5 µm

Mobile Phase:

	Time: 0	10	10	15	minutes
A. acetonitrile	32	37	47	77	%
B. Milli-Q water	68	63	53	23	%

Pressure:

1600 PSI

Flow Rate: 1.5 mL/min

Solvent:

Acetonitrile, product dissolved at 1 mg/mL

Volume injected: 5 μ L

Detection: 225 nm

Retention time:

MAJOR 21.5 min 98.7%

20.7 min 1.3%

GENERAL REMARKS:

This product is a neurotoxin component of cayenne pepper. It stimulates excitatory afferent sensory neurons, causes hypothermia, neurogenic inflammation and pain, followed by subsequent desensitization.(3,4) Capsaicin has long been used in folk medication, but has recently been approved in the U.S. for use as an analgesic in topical ointments.

APPLICATIONS AND REFERENCES:

Characterization & biosynthesis of the components of capsicum:

J. Chem. Soc., (C), p. 442 (1968).

TLC, HPLC, GC-MS analysis of capsaicinoids in tear-gas spray:

J. Forensic Science, 27, 812 (1982).

Analysis of the thermal decomposition products of capsaicin:

J. Agric. Food Chem., 40, 2263 (1992).

Estimation of capsaicin by spectrophotometry:

J. Indian Chem. Soc., 64, 176 (1987).

Capsaicin is a powerful irritant: initial administration causes intense pain. Prolonged treatment causes insensitivity to painful stimuli and induces selective degeneration of certain primary sensory neurons: Nature, 270, 741 (1977).

Neuronal depletion of Substance P:

Brain Res., 152, 183 (1978).

Science, 206, 481 (1979).

Nerve growth factor antagonizes the neurotoxic action of capsaicin on primary sensory neurons:

Nature, 301, 515 (1983).

CITED REFERENCES:

1. MERCK INDEX, 11th ed., p. 266-267, #1767 (1989).
2. Sigma quality control/production.
3. Holzer, NEUROSCIENCE, 24, 739 (1988).
4. Bevan et al., TIPS, 11, 330 (1990).

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